Risk attitudes in company boardrooms in a developing country: An empirical study for Suriname

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Abstract

We test risk attitude and risk propensity of executive and non-executive directors of almost all (read: 10) companies listed at the Suriname Stock Exchange. This stock exchange associates with an emerging market, which currently seems to be at its initial stage. With a personalized survey we collect data for 13 members in the board room. The sample size is small as the population is small, but still we can test various hypotheses that are put forward in the literature. Our main finding is that the differences between risk attitudes of board members of companies in a developing country do not differ tremendously from those of board members in developed countries.

Key words: Risk; Risk attitude; Top executives; Developing country
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1. Introduction

The decisions of the members of the board of a company have a strong effect on the performance of a company. Members like the Chief Executive Officer (CEO) and the Chief Financial Officer (CFO), and also members of supervisory boards exercise impact on the total performance of a company. This corresponds with the upper echelons perspective which argues that company performance is a reflection of its top managers (Hambrick and Mason, 1984). Various aspects of (supervisory) board membership are the focus of many recent studies, where bonuses, incentives and for example risk attitudes attract much attention. Furthermore, key stakeholders now require from companies in all sectors to clearly express the degree of their willingness to take risk. In the present study we also consider risk attitudes, where we specifically focus on board members of companies in a developing and emerging economy. Indeed, most if not all research focuses on westernized companies, also as the relevant data are perhaps more easily available. In our present study we encounter data issues, as we can only interview 13 board members, simply as there are not that many more, but then still, we examine their risk attitudes and are able to highlight a few noticeable outcomes. As far as we know, this is the first ever study that measures risk attitudes of leading directors in a developing economy.

Board room behavior and dynamics in the inner process of the board room has been the subject of much recent research (see for example de Groot et al. 2012 and their list of references, Herrmann and Datta 2005, Jensen and Zajac 2004, amongst many others). In companies there are a multitude of factors such as characteristics of individuals, roles and organizational situations which all can influence decision making of top executives. In addition, essential for executives performance is the responsibility to undertake investments with which risk is associated. These elements of decision making, together with various industrial and environmental factors, result in a company's performance (Hambrick, 2007).

Many authors use demographic characteristics of top executives as proxies for their knowledge base, cognitive orientation and risk attitudes. These proxies are used to explain (or correlate with) the strategic choices of executives, performance levels or any stock exchange outcome. A great deal of the empirical literature on executive demographic characteristics, (strategic) decision-making and company performance has been grounded in the upper echelons theory advocated by Hambrick and Mason (1984). Hambrick and Mason (1984) indicate that

demographic traits such as gender, age, educational level and functional background experiences shape the values and beliefs of top executives and can be seen as legitimate proxies for underlying cognitive abilities, knowledge and values and which, in turn, impact behavior and (strategic) decision-making. Whereas the upper echelons theory accentuates the role of demography-based preferences, the agency theory emphasizes the role of position-based preferences (Jensen and Zajac, 2004). Thus, according to the agency theory, the role in the board also has an impact on decision making of top executives. We investigate both demography and professional role in our study.

Adams et al. (2010) imply that much of the literature on board characteristics is directed towards Anglo-American companies and hence studies on boards in non-Anglo-American companies have been underexplored. Setiyono and Tarazi (2004) argue that only few companies from the latter type of companies provide information on board members to the public. For our study, we decided to interview various board members of key Surinamese companies as we believe it is interesting to analyze the risk attitudes of boardroom members of the Surinamese companies who are listed on the Suriname Stock Exchange (SSE). Furthermore, Suriname has a two-tier board system which is known as a system with an insider managerial board (executive directors) and an outsider supervisory board (non-executive directors). In addition, while most studies of companies' executives and decision making have tended to focus either on the CEO or CFO (executive directors), we extend the arguments to include non-executive directors (NED). Hence, in this paper we study the influence of various characteristics, like age, functional experience, professional role, over(confidence) of executive and non-executive directors, and the way they operate in a two-tier board, on their risk attitude in the decision making process.

We use a survey-based approach (executed as a structured interview) to provide insight into the people behind the decisions taken in the companies listed at the SSE. The Surinamese context in the sense of cultural differences influences the way people engage in doing business, thus offering an opportunity to enhance our understanding of the risk attitudes of top executives in an emerging economy. We utilize the survey proposed by de Groot et al. (2012) and adapt it to the Surinamese situation. Our survey harvests information of various characteristics (demographic, personality and company), information related to the role the respondent has in the boardroom and information regarding investment decisions. During the interview, tailor made investment scenarios are presented to the respondents. This approach differs from de Groot et al. (2012), who

use a dynamic web-page to tailor each survey to the respondent, thereby automating certain aspects of the structured interview. However, with the limited number of respondents but also the limited responses on the investment scenarios, we are not able to analyze the scenarios in detail.

The remainder of the paper is structured as follows. In Section 2 we describe the relevant theory and research hypotheses. Section 3 discusses the data collection and in Section 4 we present the results of our analyses. Finally, we conclude with a discussion of the main findings and their implications.

2. Theory and Hypotheses

To guide our empirical analysis we first review available theory and from that we generate a few hypotheses.

The explicit acknowledgement of risk when running companies has been significant in recent years as the consequences of risky decisions have become more noticeable (Sitkin and Pablo, 1992). Decision making under risk is an essential part of the job of top executives and it implies that their decisions affect their companies and environment. An individual's personal experience or beliefs about risk has an impact on the view how a decision maker assesses and reacts to risk, which is usually labeled as risk attitude. The general tendency of the decision maker to take or to avoid risk is referred to by Sitkin and Pablo (1992) as the decision maker's risk propensity and is according to Papadakis and Barwise (2002) the most widely used CEO characteristic. One way to measure this propensity is presented by MacCrimmon and Wehrung (1990) as a measure of willingness to take risk. Various characteristics (both demographic and personality characteristics) can be viewed as a signal for an executives' risk propensity or willingness to take risk. In addition, an individual's risk tolerance i.e. the amount of risk an individual is comfortably willing to take , is also important when analyzing risk attitudes.

Much empirical literature on executive demographic traits and organizational outcomes has been grounded in the upper echelon theory of Hambrick and Mason (1984). The theory states that organizational outcomes, that is, strategic choices and company performance, can be partially predicted from executives' observable (demographic) characteristics such as age, education, and functional background experiences. Furthermore, most upper echelon studies are related to chief executive characteristics (CEO) as a result of the power he/she possesses in most companies

(Hambrick and Mason 1984, Herrmann and Datta 2005). However, executive and non-executive directors are part of each other's decision context (Jensen and Zajac, 2004), and therefore when examining top level decision making it makes sense to study the decision processes of all the members of a board. Graham et al. (2013) explain that CEOs and CFOs have different personal characteristics and career paths and they also differ in terms of attitudes and this has an effect on decision making. Ultimately, it is the board of directors consisting of executive and non-executive directors who determines how to allocate resources, that is, to participate in (risky) investments and this in turn depends on their risk attitude and the willingness to take risk.

Therefore, in our study we also will use demographic characteristics, which in our case will be age and functional background as proxies for risk attitudes of board members (executive and non-executive directors).

Age

Age can be considered as both a proxy for an individual's risk propensity and for the extent of experience (Dohmen et al., 2011, Herrmann and Datta, 2005). An executive's age can influence decisions or choices in important ways. Age has been found to be negatively related with regard to the capability to incorporate new information and to make risky decisions (Wiersema and Bantel, 1992). According to de Groot et al. (2012), the negative relationship between age and the willingness to take risk has widely been recognized. Younger CEOs may be less risk averse, while older executives shall be more concerned about career and financial security and consequently be more inclined to avoid riskier projects (Graham et al., 2013, Hambrick and Mason, 1984). However, age can also reflect experience and a different outlook, allowing executives to take more risks (Graham et al., 2013). In addition, experience could make executives less cautious to the risks underlying the individual decisions. Thus, we stipulate

Hypothesis 1

Younger executives are more willing to take risk.

Hypothesis 2

More experienced executives are more willing to take risk.

Functional background experience

According to Jensen and Zajac (2004), functional background experience has extensively been referred to as the demographic characteristic to influence company performance. Hence, in our study the emphasis is on finding a relationship between functional background experience and the risk attitude of top executives. Each executive has specific experience in some functional field and this may shape decision making. The functional background experience, like accounting, finance, legal, or marketing/sales, is found to have a direct impact on the way business problems are determined, on how information is processed, and on how strategic preferences are made by executives (Jensen and Zajac, 2004). Within a group of executives with different functional backgrounds each of them will approach and analyze a problem to a large extent in terms of the objectives and activities of their own respective domains (Dearborn and Simon, 1958). In addition, functional background experience may serve as an indicator for an individual's risk propensity. Hambrick and Mason (1984) classify functional backgrounds in marketing/ sales, product R&D and entrepreneurship as so-called 'output' backgrounds and backgrounds in production, accounting/ finance and process R&D as 'throughput' backgrounds. Individuals operating within these areas are likely to have different perspectives on the company and its environment. To assess the type of functional background depends on the contextual relation purporting that output backgrounds are related to contexts characterized by greater uncertainty and ambiguity (Herrmann and Datta, 2005). Jensen and Zajac (2004) document that firms led by executives with functional background experiences in finance are more likely to pursue growth through acquisitions and diversification. This leads us to put forward the following hypotheses:

Hypothesis 3.1-3.3

Executives with output backgrounds are more willing to take risk.

Executives with output backgrounds are more likely to engage in R&D investments.

Executives with output backgrounds are more likely to engage in investments related to expansion into new markets.

Hypothesis 4

Firms with more finance executives are more likely to engage in acquisition investment activities.

Role-dependent risk attitudes

As opposed to upper echelons theory with its demographically based preferences, agency theory focuses on the different governance positions of top executives. The emphasis here is on the positions that top executives have on boards, that is, whether they are executive (inside) directors (CEO, CFO), or non-executive (outside) directors. Agency theory addresses the potential conflicts of interests between executive and non-executive directors thus leading to discussions of how their views differ as a consequence of the different roles they occupy. Therefore, it is relevant to account for the (professional) roles that executives have in the boardroom as a determinant of risk attitude. According to de Groot et al. (2012), if risk taking is an important principle of a company, and the board as a group decides on the risks to be taken, individual differences in the perceptions of executives in their willingness to take risks are essential determinants of boardroom dynamics.

A company's board serves various professional roles and tasks and these are distributed amongst members based on their expertise, functional background experience and risk propensity, amongst potentially other aspects. Agency theory states that an individual's professional role in a company can influence decision making because of differences in outlook and operation of the different roles played within the board as well as differences in information levels (Gillete et al., 2008). Non-executive directors (NEDs) for example have a supervisory role in the board. As decision makers they may be more cautious than executive directors, where the potential presence of information asymmetry could be an explanation for this behavior.

In addition, Jensen and Zajac (2004), aim to show in their study that top executives (executives and non-executive directors) who are demographically identical but occupy different roles are not necessarily related to the same strategic choices, neither are executives who are demographically different but occupy a similar role.

Taken this all together generates the following hypothesis:

Hypothesis 5

Executives for who the professional role and functional background experience match (are more consistent) are less risk averse and associate with more investment decisions than executives without this match.

(Over-) confidence

"Overconfidence is an important driver of individual choice behavior" (Griffin and Tversky, 1992) and "individuals who are overconfident put too much confidence in outcomes they believe are under their control" (March and Shapira, 1987). Particularly, top executives are presumed to possess such a personality characteristic (Hackbarth, 2008). According to de Groot et al. (2012) and Hackbarth (2008), (over-) confidence can influence decision taking and has an effect on risk taking. Consequently, it is important to understand how this characteristic affects companies' performance and therefore influences shareholder welfare. Malmendier and Tate (2005) recognize some traits of top executives that are related to company performance and emphasize the importance of (over-) confidence for companies' investments.

Goel and Thakor (2008) argue that top executives are expected to be overconfident because their success is based on past performance, which is in the end related to the risk they take. This suggests that overconfident executives are more willing to take risk. In addition, individuals that rank themselves higher with regard to their willingness to take risk, have a higher risk tolerance (Dohmen et al., 2011).

Ben-David et al. (2007) argue that investment projects are perceived with less risk by an overconfident manager, and also that such a manager assesses these projects with a low discount rate. Therefore, in comparison to a less confident manager, more projects will be perceived to have positive net present value. Hence, an overconfident manager will invest more. This leads us to postulate the following hypothesis:

Hypothesis 6

More confident executives are more willing to take risk and they also ignite more investments.

Company characteristics

Graham et al. (2013) document that there are various relationships between CEO characteristics and company characteristics. For example, male CEOs relative to female CEOs are more likely to have higher debt ratios and in particular higher short-term debt ratios. Subsequently, more debt generates more risk and higher expected returns, and this is a preference that might be related to executive personal characteristics. Some theories, like those outlined in Heaton (2002) and Hackbarth (2008) indicate that managers' behavioral traits influence the use of debt in companies.

Furthermore, Sung and Hanna (1996) identify various financial variables such as debt which are related to risk tolerance and indicate that debt is positively related to risk tolerance. This brings us to our final hypothesis, which reads as

Hypothesis 7
The larger is an executive's risk tolerance, the more willing this executive is to use debt.

In the next section we discuss the data collection, and in the subsequent section we present the empirical results for the above hypotheses.

3. Data

We collected data using a survey to analyze the risk attitudes of the board members of the companies listed at the Suriname Stock Exchange. We used the survey proposed by de Groot et al. (2012) and adapted it to the Surinamese situation. De Groot et al. (2012) used a dynamic website to tailor the survey questions to individual responses, but we executed the survey as a structured interview in order to tailor the investment scenarios to the individual situations of the respondents.

The survey was pre-tested on individuals with boardroom experience. Once their responses indicated that the questions were clear, we proceeded to send the survey to the respondents.

Respondents

The individuals in our survey work as board members for ten companies listed on the Suriname Stock Exchange (SSE). The survey was sent to both the executive and non-executive directors of these companies where their names were obtained from the companies' annual reports. As Suriname is a small country in terms of population and companies, it became apparent that certain respondents were holding more than one executive post in more than one firm. The solution for this situation is that these respondents had to complete the survey only once in the capacity of their main position.

The survey, accompanied with an invitation letter, was first sent to the CEOs of the ten listed companies requesting their participation and also their approval to send the survey to the CFOs and the NEDs of the respective companies. In the letter is explicitly declared that the

obtained information will be dealt with in confidence. The need to collect sufficient responses, created time between the survey/ interviews and the feedback. Nevertheless, we received a limited number of responses, that is, 13 full surveys. This is a small sample, but we should stress that the population is small too. Taking account of cross positions, 13 respondents amount to about 50% of the relevant board members of stock exchange listed firms in Suriname.

Questions

The purpose of our study is to identify a relation between various characteristics of top executives and their attitudes towards risk in the decision making process. Hence, we gather information on gender, age, functional experience and role within the company. In addition, we gain information on a number of company characteristics (company sector, number of employees and size of the company revenues). Subsequently, we ask the respondents to what extent in the last fifteen years they were involved in investment decisions and the typical size of these certain investments. With investments we mean new market expansion, expansion of production capacity, innovation or R&D projects, IT projects and acquisitions and mergers) they have decided on in the last fifteen years.

Our sample consists of 12 men and 1 woman. The minimum age is 42, maximum is 69 and the average age is 54 years. 9 of the 13 are a NED, while 4 are either CEO or CFO. The sectors that are represented in our sample are 2 in production, 3 in the hospitality sector (hotels and restaurants) and 8 in the financial sector (banking and investment). 2 of the interviewed board members are associated with a firm with an annual turnover of less than 50Mio SRD (Surinamese Dollar is about 0.3 USD), 3 are concerned with a turnover in between 50Mio and 100Mio SRD, and 8 of them deal with an annual turnover in between 101Mio and 500Mio SRD. In our analysis below we will code these outcomes as 25, 75 and 300, which are the middle values of these three categories. The minimum number of employees is 57, the maximum is 431, while on average the firms have 272 employees.

When we analyze our data we will treat all our 13 respondents as executives.

Insert Tables 1 and 2 about here

Table 1 gives the responses to question on investment decisions in the last 15 years, and it is clear there is quite some dispersion. The same holds for the results in Table 2 where we report on the question of which percentage of the annual turnover is usually spent on which decisions. Both tables tell us that even though the sample size is small, there is substantial variation in the data.

To measure risk attitude we ask the respondents to make an assessment of their willingness to take risk in general and in their professional role on an eleven point scale. According to Dohmen et al. (2009) this measure is used to examine heterogeneity and aspects of risk attitudes of the top executives. Using the same scale, the respondents are asked to rank the average CEO, CFO and non-executive director in their willingness to take risks.

Insert Tables 3 and 4 about here

Table 3 shows that there is substantial variation in the self-reported values on own risk attitude. Also, the average value of the judgment about the own risk attitude in general is slightly higher than that of the judgment given the position that one has within the firm.

Table 4 gives the frequency of answers to three statements on the risk attitude of three types of board members. Clearly, a CEO is believed to be more willing to take risk than a CFO or NED, which corroborates with the results in De Groot et al (2012), who could interview a much larger sample of individuals.

Insert Tables 5 and 6 about here

Finally, respondents are asked to assess four types of investment scenarios with different investment possibilities originating from the answers they have given to the question on their company's annual revenues. Each respondent obtained four investment scenarios with two varying parameters, that is, the size of the initial investment that is lost in case of the investment fails, varying for each respondent between 30% to 60% of their specific company's annual revenues, and the probability of success, which also varies for each respondent between 70% and 95% for each investment scenario. The scenarios are presented in Table 5 and the parameter setting as well

as the answers are presented in Table 6. There are a few missing observations here, but still we can use some of the outcomes in our analysis, as we will indicate in the next section.

4. Results

This section contains the correlations and regression model outcomes for the data presented in the various tables. Of course, the sample size is small, as we have data on only 13 board members, but then still, we aim to falsify the hypotheses in Section 2.

The first hypothesis H_1 predicts that younger executives are more willing to take risk. To examine this hypothesis we regress the answers to the two questions in Table 3 on a constant and the variable "age". With White-corrected standard errors we get the parameter estimates -0.085 and t-statistic -1.903 (p value is 0.084) and -0.095 with t-statistic -1.532 (p value is 0.154), respectively, both for 13 observations. So, there is some evidence that older executives are less willing to take risk, and hence we obtain moderate support for hypothesis 1.

The second hypothesis H_2 predicts that the more experience companies' executives have, the more willing they are to take risk. We base experience on the answers to the questions displayed in Table 1. We coded "Never" as 0, 1-5 is coded as 3, 5-10 is coded as 7.5, 10-15 is coded as 12.5 and more than 15 is coded as 20. Next, we sum the answers to the 5 categories and call this variable "experience". A regression of the answers to two questions in Table 1 on a constant and this "experience" variable gives an estimated parameter of -0.025 (White corrected t statistic -1.768 and p value 0.108) and -0.026 (t statistic -2.350 and p value 0.071). These results imply that more experience leads to a smaller willingness to take risk. Hence, hypothesis 2 is not supported.

The third hypothesis deals with the effect of output background. 2 of the 13 respondents have such an output function. We now regress the two variables with the answers to the questions in Table 3 on a constant and a 1-0 dummy for the output function, and obtain t statistics equal to -1.382 and -0.107. A similar exercise is done for the answers to the questions in the third and first rows of Tables 1 and 2. For the R&D investments questions we obtain a (white-corrected) t statistic of 2.408 and 1.236, respectively. And for the question on market expansions we obtain t statistics with values -0.721 and 1.316. In sum, we do find support for the second item of Hypothesis 3, and can conclude that executives with output backgrounds are more likely to engage in R&D investments.

The fourth hypothesis posits that companies with more finance executives are more likely to engage in acquisition investment activities. 8 respondents indicate to be active in the financial sector, and 5 in either industrial production or hotels/restaurants. We create a dummy variable "financial sector" which is 1 for the financial sector and 0 otherwise. The answers to the five questions in Table 2 are coded as "not relevant" is coded as 0, 0-1% as 0.5, 2%, 3%, 4% as 2, 3, 4, 5-10% as 7.5 and 11-20 % as 15.5. A regression of the answers to the last question in Table 1 on a constant and the financial sector dummy yields an estimated parameter 2.025 (with White corrected t statistic 2.905 and associated p value 0.014), whereas a regression of the answers to the last question in Table 2 gives an estimate of 3.376 (t statistic 1.467 and p value 0.176). So, there indeed seems evidence that finance executives are more likely to engage in acquisition activities.

Hypothesis 5 we predict that the more consistent an executive's professional role and functional background experience are, the higher the risk tolerance, the more investment decisions. We define the consistency of the role and the functional experience as the sum of the answers to the questions in Table 1. The investment decisions are the answers to the questions in Table 2. Regressing the answers to each of the questions in Table 2 on the "consistency" variable, we get the estimates 0.041 (with White t statistic's p value of 0.421), -0.004 (0.896), 0.029 (0.212), 0.039 (0.001), and 0.012 (0.579), respectively. Hence, only in the case of investments in IT projects (the fourth question) we find that more consistency leads to more investment decisions. So, for IT projects we find support for this hypothesis, and for all other investments we do not find such support.

Hypothesis 6 states that more confident executives are more willing to take risk and they also ignite more investments. When we regress the answers to the questions in Tables 1 and 2 on a constant and the two answers to the questions in Table 3, we get nine insignificant regression models (with p values of the joint F test all much larger than 0.05) except for the case of R&D projects in Table 2. There the p value is 0.049. The key significant parameter associates with the second question in Table 3, and hence we can conclude that when board members indicate that they are willing to take risk given their position in the firm, that then the percentage that the firm invests in R&D is larger.

Finally, the seventh hypothesis predicts that the higher an executive's risk tolerance, the more willing he or she is to use debt. For each of the four scenarios, we create the following variables. The answers to the question on annual turnover are coded as 25Mio SRD for answer

category 1, 75Mio SRD for category 2 and 300 Mio SRD for category 3. Then we divide the size of the investment for each of the scenarios by these amounts. Next, we multiply the probability of success of the project with this outcome, and finally we multiply this with the statement on the riskiness of the project, given the probability of success, and its size relative to the firm's turnover. We take this new variable as a measure of a larger willingness to accept a risky project. Using a four-equation regression model where the "willingness" is on the left-hand side and the answers to the first question in Table 3 is on the right-hand side, we obtain a pooled parameter estimate equal to 9.184 with t statistic 1.698 and p value 0.099. For the second question in Table 3, using the same type of model, we obtain a parameter estimate equal to 6.107 with t statistic 1.176 and p value 0.248. So, we seem have some mild evidence in support of H_7.

5. Conclusion

In this paper we have analyzed the risk attitudes of board members of 10 companies in a developing country. The sample of respondents is small, but this is also due the fact that the size of the population is small. As far as we know, this is the first ever study on such risk attitudes for a developing country.

Our hypotheses were all constructed from the literature on risk attitudes where the data were always collected for western industrialized countries. Most likely due to the small sample size we could not find much evidence for various hypotheses, but still various hypotheses did receive support.

To summarize, we find for this developing country and their firms that there is some evidence that younger executives are more willing to take risk and that executives with output backgrounds are more likely to engage in R&D investments. Also, we document that finance executives are more likely to engage in acquisition activities, and for IT projects that executives for who the professional role and functional background experience match are less risk averse and associate with more investment decisions than executives without this match. Finally, when executives indicate that they are willing to take risk, given their position in the firm, the percentage that the firm invests in R&D is also larger.

Naturally, the main limitation of this study is the sample size, but we believe that some interesting conclusions could be drawn. The main one seems to be that the differences between

risk attitudes of board members of companies in a developing country do not differ tremendously from those of board members in developed countries. In addition, compared to developed countries, developing countries such as Suriname suffer from limited disclosure of information.

Much more future work can be done in this area. Some developing countries are much larger than Suriname, and perhaps data collected for those countries can reveal more insights into the risk attitudes of board member of firms.

Table 1: Answers to the question: “How often were you involved in investment decisions in the past 15 years in each of the following areas?”

	Frequency (times)				
Area	Never	1-5	5-10	10-15	>15
Expansion to new markets	2	9	1	0	1
Expansion of production capacity	1	9	1	0	1
Innovation or R&D	2	7	2	0	1
Information technology	4	6	1	1	0
Mergers and acquisitions	5	8	0	0	0

Table 2: Answers to the question: “Which percentage of the annual turnover is usually spent of investments in each of the following areas?”

	Percentages						
Area	0-1%	2%	3%	4%	5-10%	11-20%	Not relevant
Expansion to new markets	1	1	1	1	1	2	4
Expansion of production capacity	2	1	1	2	3	0	2
Innovation or R&D	4	2	0	2	1	0	1
Information technology	3	2	3	1	1	0	1
Mergers and acquisitions	4	0	0	0	1	1	5

Table 3: Judgment of own risk attitude (in our analysis coded by a number ranging from 1 to 10)

Not willing at all							Willing to a large extent				Average
0	1	2	3	4	5	6	7	8	9	10	
"*In general*, are you willing to take risk or are you someone who prefers to avoid risk?"											
0	0	0	1	1	3	2	3	3	0	0	6.08
"*Given your position in the firm*, are you willing to take risk or are you someone who prefers to avoid risk?"											
0	0	0	2	2	2	1	5	1	0	0	5.62

Table 4: Judgment of own risk attitude of types of board members: “Do you think they are willing to take risk or are they someone who prefers to avoid risk?” (in our analysis coded by a number ranging from 1 to 10)

	Not willing at all										Willing to a large extent	
	0	1	2	3	4	5	6	7	8	9	10	Average
CEO	0	0	1	0	1	3	3	3	1	1	0	5.77
CFO	0	1	1	3	1	3	1	3	0	0	0	4.46
NED	0	0	2	2	2	3	2	0	2	0	0	4.69

Table 5: Four scenarios in words

Scenario 1

At a board meeting where the strategy of your firm has been discussed it became apparent that expansion is possible using a new marketing channel in another country. Your marketing and sales department estimates that the costs are x Mio SRD. If the plan fails, this investment is gone, but no other costs are to be expected. It is uncertain whether the new marketing channel really works, but the people at the relevant department estimate the success rate as y%. On a scale of 1 (not risky at all) to 7 (very risky), how do you estimate this risk of this investment?

Scenario 2

Your firm considers an investment to increase production. The total amount is x Mio SRD. If it so turns out that the investment does not work and production does not increase, then the investment amount is lost but no other losses are incurred. The estimate that this project will be successful is y%. On a scale of 1 (not risky at all) to 7 (very risky), how do you estimate this risk of this investment?

Scenario 3

The R&D department of your company recommends a new production technique. To see whether this technique works, some research has to be done. If the technique fails, the only costs were these research costs. Development costs are estimates as x Mio SRD, and the probability that the new technique is indeed applicable in your firm is y%. On a scale of 1 (not risky at all) to 7 (very risky), how do you estimate this risk of this investment?

Scenario 4

The IT department of your firm considers the implementation of a new system which in the longer term could lead to substantial savings. Costs of this implementation are estimated at x Mio SRD. If the new system does not meet its demands, then this investment amount is lost, but no other damage is done. The success rate of this project is estimated by the IT department as y%. On a scale of 1 (not risky at all) to 7 (very risky), how do you estimate this risk of this investment?

Table 6: Four scenarios and four probabilities, the numbers

Scenarios

1	26000000	31000000	15000000	20000000
2	20000000	26000000	31000000	15000000
3	78727200	98409000	59045400	1.18E+08
4	1.02E+08	76500000	1.28E+08	1.53E+08
5	8000000	10000000	11000000	6000000
6	59045400	1.18E+08	78727200	98409000
7	63000000	52500000	31500000	42000000
8	54000000	72000000	90000000	1.08E+08
9	70000000	90000000	1.00E+08	50000000
10	13200000	26400000	17600000	22000000
11	98409000	78727200	1.18E+08	59045400
12	20800000	15600000	26000000	31200000
13	1.28E+08	1.53E+08	1.02E+08	76500000

Probabilities (%)

1	85	75	80	70
2	75	85	90	80
3	95	80	75	90
4	80	90	70	95
5	90	75	85	70
6	70	80	90	80
7	75	70	80	85
8	80	75	90	70
9	70	80	75	85
10	75	85	90	70
11	75	70	80	85
12	90	70	85	75
13	70	85	95	75

Answers to the questions on risk

1	6	5	3	3
2	7	6	5	5
3	2	6	6	6
4				
5				
6	4	3	6	6
7	7	7	7	7
8	5	4	5	5
9	4	4	5	5
10				
11		3	3	3
12	2			
13	6	6	6	6

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